



# TRANSIENT VENTRICULOPERITONEAL SHUNT MALFUNCTION AFTER CONSTIPATION

KONSTİPASYON SONRASI GELİŞEN GEÇİCİ VENTRİKÜLOPERİTONEAL ŞANT  
MALFONKSİYONU

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## ABSTRACT

The most common encountering complications of ventriculoperitoneal shunting are infection and shunt malfunction. In this report we present an unusual cause of ventriculoperitoneal shunt malfunction as constipation. A 40-year-old male patient underwent ventriculoperitoneal shunting due to idiopathic normal pressure hydrocephalus four months ago. Postoperatively the patient's complaints near completely resolved. In the 4th month follow-up control the patient suffered from motor weakness in both legs and abdominal pain. On the physical examination abdominal distension was observed. On the neurological examination mild (MRC power: 4/5) paraparesis and lethargy was observed. Fundus examination showed bilateral pupil stasis. Cranial magnetic resonance imaging showed marked ventricular dilatation despite the proper position of ventricular catheter. Valve puncture with a fine needle showed no abnormality and free cerebrospinal fluid drainage. Valve pumping test was normal. Cerebrospinal fluid analyses were within normal range without infection or biochemical abnormality. In the standing abdominal x-ray graphy, abdominal distension and close relation of peritoneal catheter with bowels was seen. The patient underwent medical therapy with laxatives and his complaints resolved near totally on third day of the treatment. Reduction in ventricular size was also seen on the fifth day control computed tomography. Constipation rarely cause shunt malfunction and laxative treatment resolves the symptoms without any additional surgical intervention.

**Key Words:** Constipation, ventriculoperitoneal shunt, transient, malfunction

## ÖZET

Ventriküloperitoneal şant operasyonlarında en sık karşılaşılan komplikasyonlar enfeksiyonlar ve şant malfonksiyonlarıdır. Bu makalede şant malfonksiyonlarının nadir bir nedeni olan konstipasyonu sunduk. Kırk yaşında erkek hastaya 4 ay önce idiopatik normal basınçlı hidrosefali tanısı ile ventriküloperitoneal şant takıldı. Ameliyat sonrası hastanın şikayetleri tamamen geçti. Ameliyattan 4 ay sonra hasta her iki bacakta güçsüzlük ve karın ağrısı nedeni ile başvurdu. Fizik muayenesinde abdominal distansiyon saptandı. Nörolojik muayenesinde hafif (MRC 4/5) paraparezi ve letarji tespit edildi. Fundus muayenesinde bilateral papil stazi mevcuttu. Kranial MR görüntülemeye kateterin yerleşiminin uygun olduğu görülmesine rağmen ventriküler dilatasyon saptandı. Şant rezervuarından enjektör ile ponksiyon yapıldığında BOS gelişinin rahat olduğu görüldü. Valf pompa testi normaldi. BOS biyokimyasal ve mikrobiyolojik değerlendirmesi normaldi. Ayakta direkt batin grafisinde abdominal distansiyon ve kateterin ince barsaklarla yakın ilişkili olduğu görüldü. Hastaya laksatif tedavi başlandı ve tedavinin üçüncü gününde hastanın şikayetleri tamamen düzeldi. Tedavinin beşinci gününde kontrol beyin tomografisinde ventrikül boyutlarının küçüldüğü gözlemlendi. Konstipasyon şant malfonksiyonlarının nadir bir sebebidir ve laksatif tedavi ile herhangi bir cerrahi girişime gerek kalmadan düzelebilir.

**Anahtar Kelimeler:** Konstipasyon, ventriküloperitoneal şant, geçici, işlev bozukluğu

## Introduction

Although complications due to ventriculoperitoneal shunt operations are important problems in the hydrocephalus treatment. This is still the most performed operation. Compared with other surgical techniques this is more time saving and easy to perform. Various complications can be seen after different decades of the operation.

Mostly seen complications are obstruction, insufficiency and infection. Different, bizarre and not previously guessed complications can also seen. Different types of shunt complications have also been reported for the abdominal portion of the shunts (1-3). In this report we present a case of shunt malfunction after constipation. According to our

research this situation can be seen very rarely and appropriate treatment of constipation recovers shunt malfunction and provide cerebrospinal fluid (CSF) circulation without any undesired revision surgery.

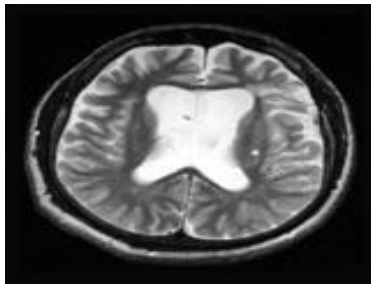
### Case Report

A 40-year-old male patient was admitted to our hospital with the complaints of lethargy, incontinance and paraparesis. The patient underwent ventriculoperitoneal shunting due to idiopathic normal pressure hydrocephalus.

A medium pressure adult type ventriculoperitoneal shunt (CSF Flow-Control Valve; Medtronic, California, USA) was used. Postoperatively the patient's complaints near completely resolved. The patient discharged from the hospital a few days later without any additional problem.

In the 4th month follow-up control the patient suffered from motor weakness in both legs and abdominal pain. Abdominal distension observed at physical examination.

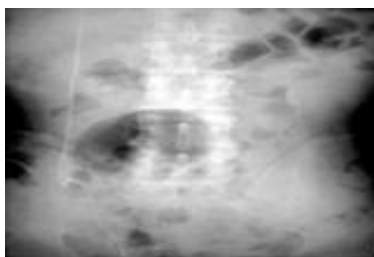
Mild (MRC power: 4/5) paraparesis and lethargy observed at neurologic examination. Fundus examination showed bilateral pupil stasis. Blood tests including biochemical and hematological parameters were within normal range. Cranial magnetic resonans imaging showed marked ventricular dilatation despite the proper position of ventricular catheter (Fig. 1).



**Figure 1:** T2-weighted cranial magnetic resonance imaging shows marked dilatation of the ventricular system despite the shunt.

Valve puncture with a fine needle showed no abnormality and free cerebrospinal fluid drainage, so the proximal catheter obstruction excluded. Valve pumping test was normal.

Cerebrospinal fluid (CSF) analyses were within normal range without infection or any biochemical abnormality. In the standing abdominal x-ray graphy, abdominal distension and close relation of peritoneal catheter with bowels was seen (Fig. 2).



**Figure 2:** Abdominal x-ray shows close relation of bowel loops and abdominal catheter with marked distension.



**Figure 3:** Post treatment computed tomography shows marked reduction in ventricle size.

Abdominal ultrasonography showed no abdominal pseudocyst formation or malposition of the distal end. Minimal intraabdominal free fluid was also seen at ultrasonography. The patient underwent medical therapy with laxatives. The patient clearly benefits from treatment and his complaints resolved near totally on the day three. Reduction in ventricular size was also seen on the fifth day control computed tomography (Fig. 3).

### Discussion

Ventriculoperitoneal (VP) shunting is the most common choice for the treatment of hydrocephalus (4,5). Several abdominal complications of VP shunts including intestinal volvulus, pseudocyst, and extrusion through the scrotum, the vagina or the gastrointestinal tract have been reported in previous reports (3-8). As mentioned in this report constipation rarely cause shunt malfunction (9, 10) The diagnose of constipation related shunt malfunction mainly depends on the exclusion of other possible reasons of shunt malfunction and contains some special difficulties. A detailed past medical history, careful physical examination, blood tests and CSF sampling and radiological studies like as standing x-ray graphy, abdominal ultrasonography, computerized cranial tomography or magnetic resonance imaging is essential for the proper diagnose. Valve pumping test may be useful for the differential diagnose of proximal or distal catheter obstruction. The radionuclide CSF shunt imaging is simple and effective method of assessing shunt patency. After occlude the distal part of the shunt by pressing injection of  $^{99m}\text{Tc}$ -DTPA is made. Then images at 1., 3., 6. and 24. hours was taken at skull and abdomen. We should see ventricular reflux of isotope and abdominal passing without blockage with no delay (11).

In conclusion we suggest that shunt malfunction in our case was related with constipation and laxative treatment resolves the symptoms without surgical intervention.

### References

1. Agha FT, Amendola MA, Shirazi KK, Amendola BE, Chandler WF. Unusual abdominal complications of ventriculoperitoneal shunt. *Radiology*. 1983;146:323–26.
2. Bryant M. Abdominal complications of ventriculoperitoneal shunts. *Am Surg*. 1998;54: 50–54.

3. Davidson RI. Peritoneal bypass in the treatment of hydrocephalus: historical review and abdominal complications. *J Neurol Neurosurg Psychiatry*. 1976;39:640–46.
4. Barnes NP, Jones SJ, Hayward RD, Harkness WJ, Thompson D. Ventriculoperitoneal shunt block: what are the best predictive clinical indicators? *Arch Dis Child*. 2002;87:198–201.
5. Drake JM, Sainte-Rose C. Shunt complications. In: Drake JM, Sainte-Rose C (eds) *The shunt book*. Blackwell, Cambridge, Massachusetts; 1995:136–37.
6. Park CK, Wang KC, Seo JK, Cho BK. Transoral protrusion of peritoneal catheter: a case report and literature review. *Childs Nerv Syst*. 2000;16:184–89.
7. Sathyanarayana S, Wylen EL, Baskaya MK, Nanda A. Spontaneous bowel perforation after ventriculoperitoneal shunt surgery: case report and a review of 45 cases. *Surg Neurol*. 2000;54:388–96.
8. Pople IK, Bayston R, Hayward RD. Infection of cerebrospinal fluid shunts in infants: a study of etiological factors. *J Neurosurg*. 1992;77:29–36.
9. Martínez-Lage JF, Martos-Tello JM, Ros-de-San Pedro J, Almagro MJ. Severe constipation: an under-appreciated cause of VP shunt malfunction: a case-based update. *Childs Nerv Syst*. 2008;24(4):431–435.
10. Muzumdar D, Ventureyra EC. Transient ventriculoperitoneal shunt malfunction after chronic constipation: case report and review of literature. *Childs Nerv Syst*. 2007;23(4):455–458.
11. May CH, Aurisch R, Kornrumpf D, Vogel S. Evaluation of shunt function in hydrocephalic patients with the radionuclide <sup>99m</sup>Tc-pertechnetate. *Childs Nerv Syst*. 1999;15:239–44.

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#### **Conflict of interest**

The authors declare no conflict of interest.